

CLAIMS

What is claimed is :

SUB

1. A method for estimating a channel, the method comprising the steps of:
 - calculating a least square channel estimate based on a training sequence;
 - calculating an interpolation coefficient, wherein said interpolation coefficient is independent from the statistics of the channel;and
 - estimating the channel based on said interpolation coefficient and said least square channel estimate.
2. The method of claim 1, wherein the step of calculating an interpolation coefficient comprises the step of calculating the maximum number of resolvable multiple paths on the channel.
3. The method of claim 2, wherein the step of calculating an interpolation coefficient further comprises the step of constructing a receiver multipath power profile of the channel.
4. The method of claim 3, wherein the step of calculating an interpolation coefficient further comprises the step of performing a fast fourier transform on said multipath power profile.
5. The method in claim 4, wherein the step of calculating an interpolation coefficient further comprises the step of determining an interpolation matrix by constructing a teoplitz of the result of the step of performing a fast fourier transform.
6. The method in claim 5, wherein the step of calculating an interpolation coefficient further comprises multiplying said interpolation matrix by said least square channel estimate.

1 7. An apparatus for estimating a channel, the apparatus
2 comprising:

3 an LS estimator for calculating a least square channel
4 estimate based on a training sequence;

5 a coefficient interpolator coupled to said LS estimator,
6 said coefficient interpolator for calculating an
7 interpolation coefficient, wherein said interpolation
8 coefficient is independent from the statistics of the
9 channel; and

10 a channel estimator coupled to said coefficient
11 interpolator, said channel estimator for estimating the
12 channel based on said interpolation coefficient and said
13 least square channel estimate.

1 8. The apparatus of claim 7 wherein said coefficient interpolator
2 further calculates the maximum number of resolvable paths on the channel
3 for use in calculating, said interpolation coefficient

1 9. The apparatus of claim 8, wherein said coefficient interpolator
2 constructs a receiver multipath power profile of the channel for use in
3 calculating said interpolation coefficient.

1 10. The apparatus of claim 9, wherein said coefficient interpolator
2 further performs a fast fourier transform on said multipath power profile to
3 generate a result for use in calculating said interpolation coefficient.

1 11. The apparatus of claim 10, wherein said coefficient
2 interpolator further constructs a teoplitz matrix of the result of said fast
3 fourier transform to generate an interpolation matrix.

1 12. The apparatus of claim 11, wherein said coefficient
2 interpolator further multiplies said interpolation matrix by said least square
3 estimate calculated in said LS estimator to estimate the channel.

1 13. A method for estimating at least one channel, said method
2 comprising the steps of:

3 determining a receiver multipath profile for the at least
4 one channel; and
5 calculating an interpolator coefficient based on said
6 receiver multipath profile.

1 14. The method of claim 13, further comprising the steps of:

2 calculating a least square channel estimate for each at
3 least one channel; and
4 multiplying each least squares channel estimate for
5 each at least one channel by said interpolation
6 coefficient to estimate each at least one channel.

1 15. An apparatus for estimating at least one channel, said apparatus
2 comprising:

3 a coefficient interpolator for determining a receiver
4 multipath profile for the at least one channel and
5 calculating an interpolation coefficient based on said
6 receiver multipath profile.

1 16. The apparatus of claim 15, further comprising:

2 a least squares channel estimator for calculating a least
3 squares channel estimate for each at least one channel;
4 and

5 a channel estimator coupled to said least squares
6 estimator and said coefficient interpolator, said channel
7 estimator for multiplying each least squares channel
8 estimate for each at least one channel by said
9 interpolation coefficient to estimate each at least one
10 channel.

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~~17.~~ An OFDM apparatus comprising:

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means for storing a receiver multipath power profile;

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and

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means for calculating an interpolator coefficient based

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on said receiver multipath power profile.

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18. The apparatus in claim 16, further comprising:

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a buffer for storing a training sequence;

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means for calculating a least square channel estimate

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from said stored training sequence; and

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means for combining said least square channel

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estimate with said interpolator coefficient.

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